

STEMGirls Twin Cities

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The Problem:

In 2011, the University of Minnesota Twin Cities awarded 120 undergraduate degrees in engineering to women... only 17% of their total number of engineering bachelor’s degrees.¹ While the numbers are slightly higher for physical and social science degrees, overall women make up less than a quarter of science and math degree-earning graduates. This is a problem because “over the past 10 years, growth in STEM jobs was three times as fast as growth in non-STEM jobs. Between the years 2008 to 2018, STEM occupations are projected to grow by 17.0 percent compared to 9.8 percent growth for non-STEM occupations and STEM workers earn 26 percent more than their non-STEM counterparts (U.S. Department of Commerce, 2011). Although women make up about half the total U.S. college-educated workforce, they represented only 26% of the college-educated workforce in S&E occupations in 2008 (National Science Board, 2012). The simple truth is that Americans cannot remain competitive in STEM fields without more women entering these careers.”²

The Purpose of This Site:

To be a resource and give people the tools to learn how to motivate, encourage, and challenge girls to excel in math and science, increasing the likelihood they'll pursue careers in a STEM-centric field. This in turn will provide new perspectives and solutions to problems, benefit the Twin Cities economy through higher earning potentials, and work towards removing the persistent gender gap.

What it Will Say:

By changing the way people approach girls’ daily science and math interactions and education, and working to break down societal and cultural stereotypes, girls’ confidence and enthusiasm for STEM subjects will flourish. When girls are confident in their abilities, and enjoy learning about the world around them, they’ll be much more likely to consider pursuing a STEM-related career, which will have wide-reaching, positive repercussions on the Twin Cities.

Target audience:

Parents, family, and educators of girls age 2-18.

What image the site will portray:

There have been numerous studies and research done on the topic of getting girls interested in math and science, and how best to teach them to investigate and collaborate. By drawing on this knowledge, STEMGirls Twin Cities will position itself as a credible resource that can frequently be referred to as the girls grow.

What the audience will do with the site:

People will come to the site for facts, tips, ideas and to join a community in the Twin Cities that supports and encourages the young women in their life to grow their science and math skills/abilities. There will be project ideas, webinars, instructions and information that’s easily accessible, geared towards helping young girls build their confidence and feeling empowered to get STEM-oriented degrees and enter relevant fields. By helping people motivate young girls to pursue STEM classes, majors and careers, the community benefits from the innovation, varied perspectives, and eventual economic return.

Resources:

- 1. <http://www.asee.org/papers-and-publications/publications/college-profiles/2011-profile-engineering-statistics.pdf>
- 2. http://tpt.vo.llnwd.net/o26/scigirls/SciGirls_BigIdea.pdf

Competitive Analysis

There currently does not appear to be a site geared towards parents of girls age 2-18, that is specifically for parents and other adults in the Twin Cities. The closest thing found during research is the PBS Parents’ site, which is geared towards parents of elementary aged girls. Because it’s a companion site to the PBS show “SciGirls,” most of the materials revolved around the show’s episodes (i.e. the activities are ones that were done on the show, the “About” is about PBS in general and show characters, etc.), and the “STEM-sational Resources” section only has two items in it.

GIT MSP is predominately a social networking site geared towards women already in the workforce, though there are a few items for older girls. The site doesn’t seem to have too much activity on it, since the calendar for the month of November is blank, and there is only about one blog entry a month (and they are mostly videos of interviews). They do have a mentor section where middle school and high school girls can sign up to be partnered with a mentor.

The national site for Engineering Your Life is “a guide to engineering for high school girls.” The section of the site geared towards parents and adults is quite sparse, and mostly just has a few links that parents can follow to find out about careers in engineering that their daughters could pursue.

The Get STEM of Minnesota website is “a web portal designed to connect Minnesota educators with science and technology businesses, in order to better prepare students for post-secondary education programs and careers in [STEM fields].” This site is not specifically aimed at girls, nor does it much of a resource besides finding companies/professionals to partner with or come speak to students.

Competitor’s Sites



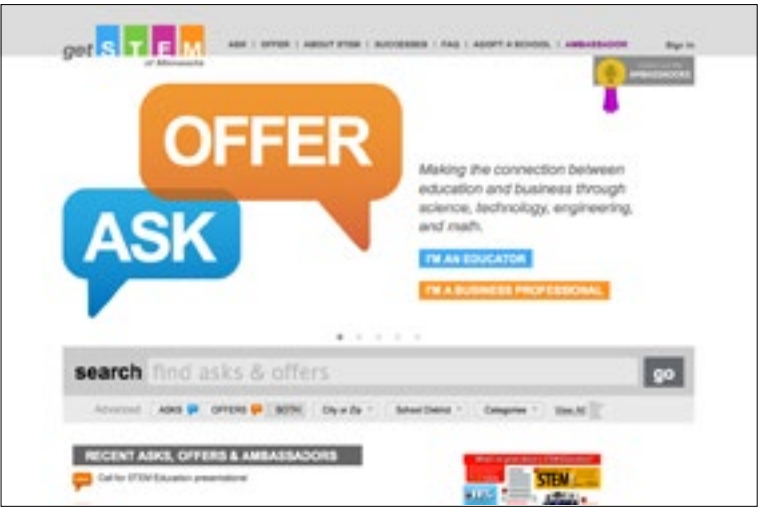
www.gitmsp.org



www.engineeryourlife.org



www.pbs.org/parents/scigirls/



www.getstem-mn.com



#284F63



#825084



#91989D



#EDD19F



#188754



#992D5A



#D2CDC2

Helvetica

Main Heading

Subheading

Call me Ishmael. Some years ago - never mind how long precisely - having little or no money in my purse, and nothing particular to interest me on shore, I thought I would sail about a little and see the watery part of the world. It is a way I have of driving off the spleen and regulating the circulation. Whenever I find myself grow-ing grim about the mouth; whenever it is a damp, drizzly November in my soul; whenever I find myself involun-tarily pausing before coffin warehouses, and bringing up the rear of every funeral I meet; and especially whenever my hypos get such an upper hand of me, that it requires a strong moral principle to prevent me from deliberately stepping into the street, and methodically knocking people's hats off - then, I account it high time to get to sea as soon as I can.

Arial

Main Heading

Subheading

Call me Ishmael. Some years ago - never mind how long precisely - having little or no money in my purse, and nothing particular to interest me on shore, I thought I would sail about a little and see the watery part of the world. It is a way I have of driving off the spleen and regulating the circulation. Whenever I find myself grow-ing grim about the mouth; whenever it is a damp, drizzly November in my soul; whenever I find myself involun-tarily pausing before coffin warehouses, and bringing up the rear of every funeral I meet; and especially whenever my hypos get such an upper hand of me, that it requires a strong moral principle to prevent me from deliberately stepping into the street, and methodically knocking people's hats off - then, I account it high time to get to sea as soon as I can.

Futura

Main Heading

Subheading

Call me Ishmael. Some years ago - never mind how long precisely - having little or no money in my purse, and nothing particular to interest me on shore, I thought I would sail about a little and see the watery part of the world. It is a way I have of driving off the spleen and regulating the circulation. Whenever I find myself growing grim about the mouth; whenever it is a damp, drizzly November in my soul; whenever I find myself involuntarily pausing before coffin warehous-es, and bringing up the rear of every funeral I meet; and especially whenever my hypos get such an upper hand of me, that it requires a strong moral principle to prevent me from deliberately stepping into the street, and methodically knocking people's hats off - then, I account it high time to get to sea as soon as I can.

Proxima Nova

Main Heading

Subheading

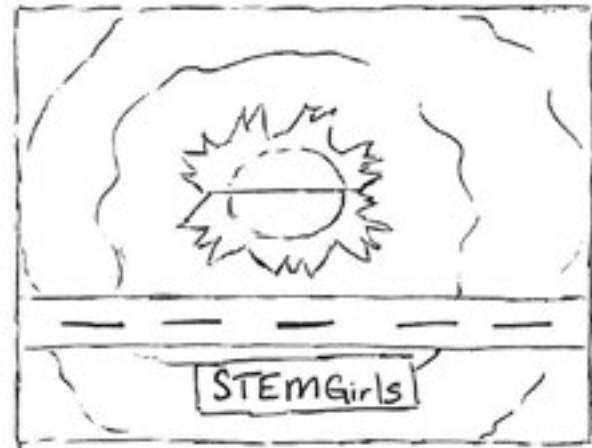
Call me Ishmael. Some years ago - never mind how long precisely - having little or no money in my purse, and nothing particular to interest me on shore, I thought I would sail about a little and see the watery part of the world. It is a way I have of driving off the spleen and regulating the circulation. Whenever I find myself grow-ing grim about the mouth; whenever it is a damp, drizzly November in my soul; whenever I find myself involuntari-ly pausing before coffin warehouses, and bringing up the rear of every funeral I meet; and especially whenever my hypos get such an upper hand of me, that it requires a strong moral principle to prevent me from deliberately stepping into the street, and methodically knocking peo-ple's hats off - then, I account it high time to get to sea as soon as I can.

Garamond

Main Heading

Subheading

Call me Ishmael. Some years ago - never mind how long precisely - having little or no money in my purse, and nothing particular to interest me on shore, I thought I would sail about a little and see the watery part of the world. It is a way I have of driving off the spleen and regulating the circulation. Whenever I find myself growing grim about the mouth; whenever it is a damp, drizzly November in my soul; whenever I find myself involuntarily pausing before coffin warehouses, and bringing up the rear of every funeral I meet; and especially whenever my hypos get such an upper hand of me, that it requires a strong moral principle to prevent me from deliberately stepping into the street, and methodically knocking people's hats off - then, I account it high time to get to sea as soon as I can.



Logo

Link Link Link Link Link

Role Models

Software Engineer Geologist
CTO Sys Admin
Research Biologist Chemist
Astronaut Aerospace

Name Field Bio
Bio

Name Field Bio
Bio

Name Field Bio
Bio

Link Link Link Link Link

Choose from list of fields and get bios about leading women in that field along with women at all levels.

Logo

Link Link Link Link Link

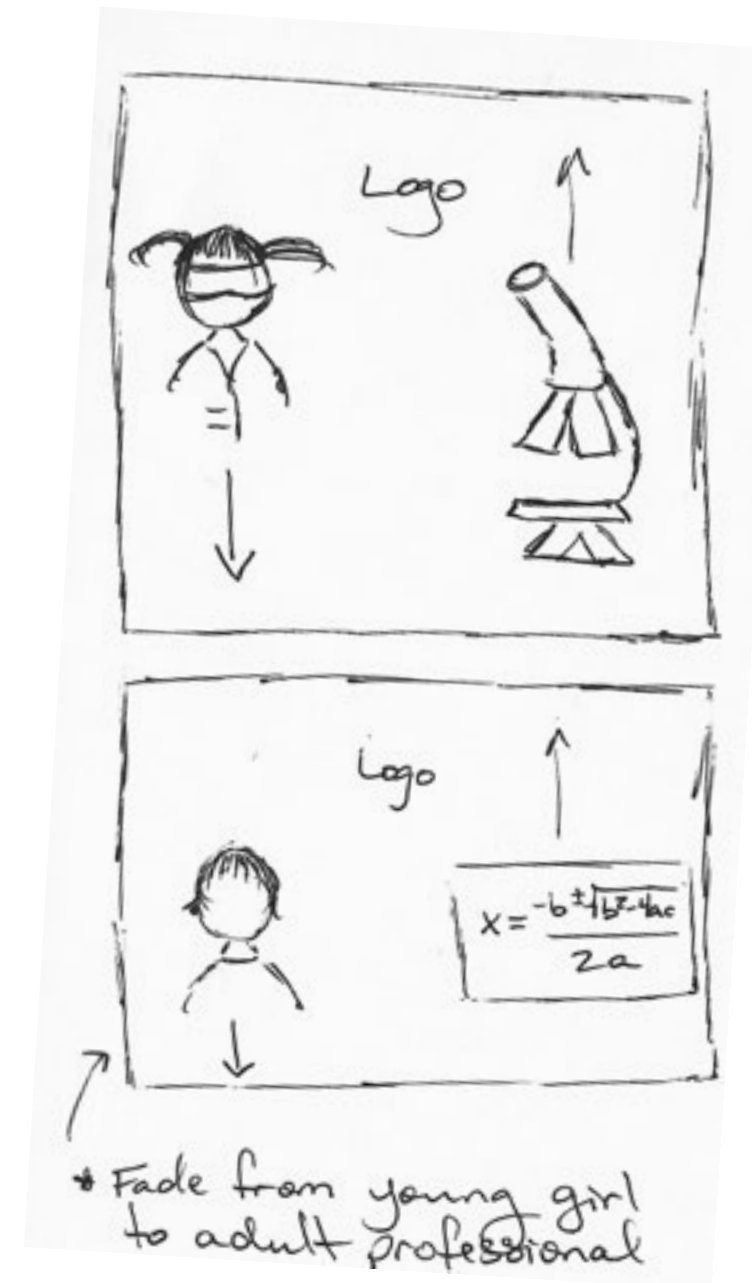
SciGirls 7

1 2 3 4 5 6 7

4.

Link Link Link Link Link

Choose one of 7 steps and get examples & tips for getting girls excited/involved in STEM.



Logo

Role Models

S T E M

When one is selected popup bio

Name Field College Bio

Logo

SciGirls 7

1.

2.

3.

4.

5.

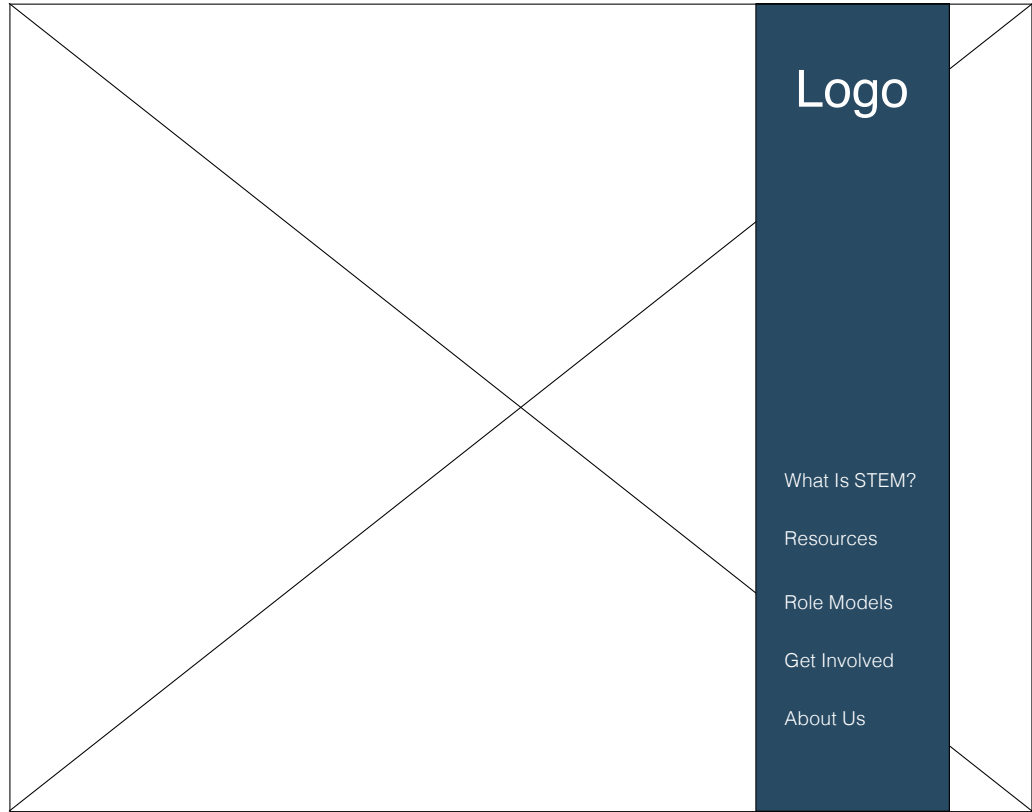
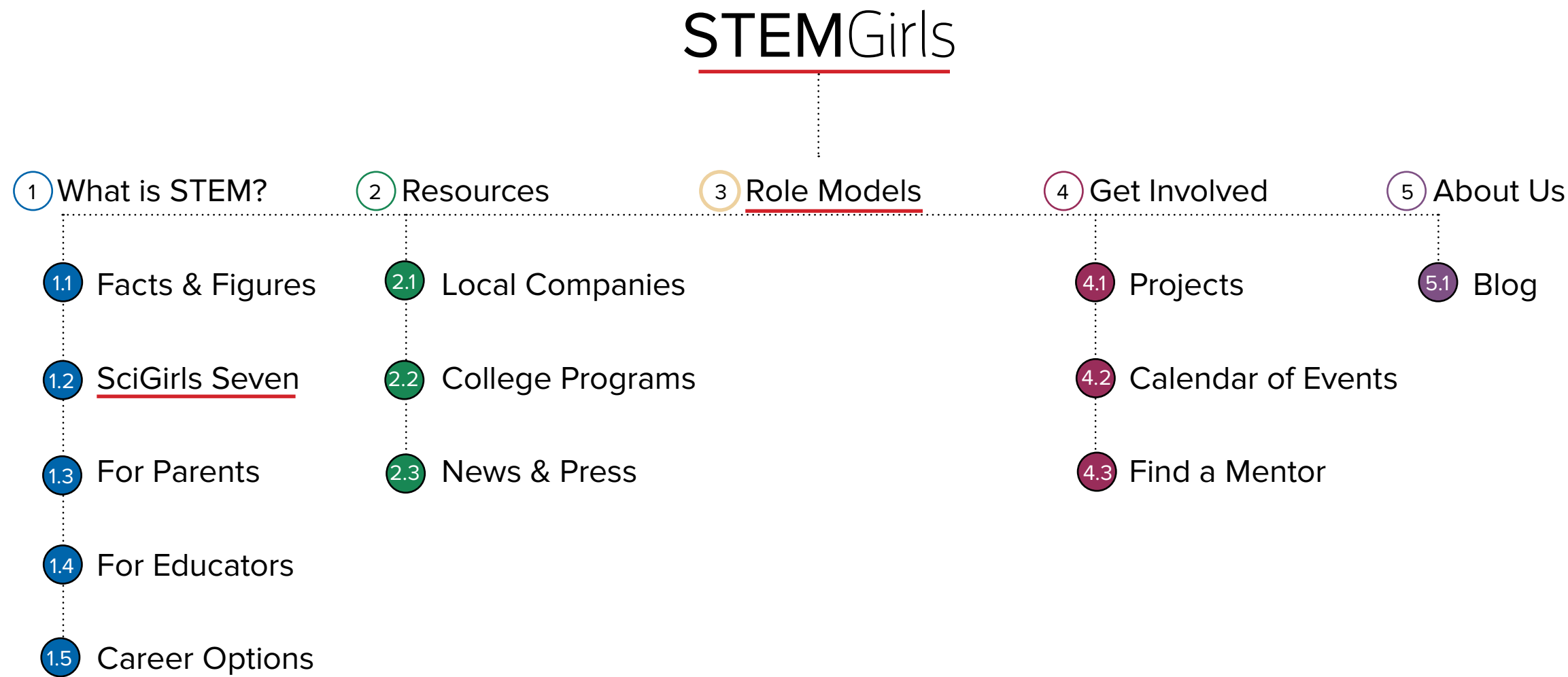
6.

7.

ROUGH SKETCHES

ROUGH SKETCHES

SITE MAP



WIREFRAMES

STEMGirls

[What Is STEM?](#)[Resources](#)[Role Models](#)[Get Involved](#)[About Us](#)

Role Models

Sciences:
Chemical Engineer
Soil and Plant Scientist
Nuclear Medicine Technologist
Physicist
Astronomer
Atmospheric and Space Scientist
Nanosystems Engineer
Astronaut

Technology:
Video Game Designer
Accountant
Auditor
C# Computer Programmer
Database Administrator
Mechatronics Engineer
Software Developer
Applications Developer

Engineering:
Aerospace Engineer
Agricultural Engineer
Civil Drafter
Electrical Engineer
Marine Architect
Materials Scientist
Avionics Technician
Cost Estimators

Math:
Actuary
Mathematical Technician
Physicist
Risk Management Specialist
Statistician
Mathematician
Natural Sciences Manager
Operations Research Analyst



MAE C. JEMISON
NASA ASTRONAUT

Born October 17, 1956, in Decatur, Alabama, but considers Chicago, Illinois, to be her hometown. Recreational interests include traveling, graphic arts, photography, sewing, skiing, collecting African Art, languages (Russian, Swahili, Japanese), weight training, has an extensive dance and exercise background and is an avid reader. Her parents, Charlie & Dorothy Jemison, reside in Chicago. [She] graduated from Morgan Park High School, Chicago, Illinois, in 1973, received a bachelor of science degree in chemical engineering (and fulfilled the requirements for a B.S. in African and Afro-American Studies from Stanford University in 1977, and a doctorate degree in medicine from Cornell University in 1981.

Dr. Jemison has a background in both engineering and medical research. She has worked in the areas of computer programming, printed wiring board materials, nuclear magnetic resonance spectroscopy, computer magnetic disc production, and reproductive biology. Dr. Jemison completed her internship at Los Angeles County/USC Medical Center in July 1982 and worked as a General Practitioner with INARose Los Angeles Medical Group in Los Angeles until December 1982.



DOROTHY "DOTTIE" METCALF-LINDENBURGER
NASA ASTRONAUT

Dorothy "Dottie" Metcalf-Lindenburger, the daughter of two teachers with a love of the space program, has "The Right Stuff." As a NASA astronaut who flew with the crew of STS-131 to the International Space Station, Ms. Metcalf-Lindenburger has risen to heights that make those of the Mile High City of Denver, in which she grew up, pale by comparison.

It may have been inevitable that Ms. Metcalf-Lindenburger would follow in her parents' footsteps to become a high school earth science and astronomy teacher – and inevitable, too, that she would copy them by sharing her love of the space program with her students. As Ms. Metcalf-Lindenburger writes, while she found photos from the Hubble Space Telescope "fascinating," it was her fascination that bred a similar fascination about spaceflight in her students.

And, it was one of her students who, in raising the question "How do astronauts go to the bathroom in space?", led Ms. Metcalf-Lindenburger to a NASA Website that not only provided her the answer but also an application to become an educator astronaut.



SAMANTHA CRISTOFORIETTI
ESA ASTRONAUT

Born in Milan, Italy, on 26 April 1977, Samantha Cristoforetti enjoys hiking, scuba diving, yoga, reading and traveling. Other interests include technology, nutrition and the Chinese language. Samantha completed her secondary education at the Liceo Scientifico in Trento, Italy, in 1996 after having spent a year as an exchange student in the United States.

In 2001, she graduated from the Technische Universität München, Germany, with a master's degree in mechanical engineering with specializations in aerospace propulsion and lightweight structures. As part of her studies, she spent four months at the Ecole Nationale Supérieure de l'Aéronautique et de l'Espace in Toulouse, France, working on an experimental project in aerodynamics. She wrote her master's thesis in solid rocket propellants during a 10-month research stay at the Mendeleev University of Chemical Technologies in Moscow, Russia.

As part of her training at the Italian Air Force Academy, she also completed



MAE C. JEMISON
NASA ASTRONAUT

From January 1983 through June 1985, Dr. Jemison was the Area Peace Corps Medical Officer for Sierra Leone and Liberia in West Africa. Her task of managing the health care delivery system for U.S. Peace Corps and U.S. Embassy personnel included provision of medical care, supervision of the pharmacy and laboratory, medical administrative issues, and supervision of medical staff. She developed curriculum and taught volunteer personal health training, wrote manuals for self-care, developed and implemented guidelines for public health/safety issues for volunteer job placement and training sites. Dr. Jemison developed and participated in research projects on Hepatitis B vaccine, schistosomiasis and rabies in conjunction with the National Institute of Health and the Center for Disease Control.

On return to the United States, Dr. Jemison joined CIGNA Health Plans of California in October 1985 and was working as a General Practitioner and attending graduate engineering classes in Los Angeles when selected to the astronaut program.



DOROTHY "DOTTIE" METCALF-LINDENBURGER
NASA ASTRONAUT

As an earth science and astronomy teacher, Ms. Metcalf-Lindenburger seemed a natural fit for the astronaut program – she had earned her bachelor's degree in geology from Whitman College, Walla Walla, Washington, and her teaching certificate from Central Washington University, Ellensburg – but it was her enthusiasm and eagerness for spaceflight, that "Right Stuff" nurtured in her by two teachers, her parents, that made her stand out among all other candidates to win her a much-coveted place in the astronaut program.



SAMANTHA CRISTOFORIETTI
ESA ASTRONAUT

a bachelor's degree in Aeronautical sciences at the University of Naples Federico II, Italy, in 2005. In 2001 Samantha joined the Italian Air Force Academy in Pozzuoli, Italy, graduating in 2005. She served as class leader and was awarded the Honour Sword for best academic achievement. From 2005 to 2006, she was based at Sheppard Air Force Base in Texas, USA. After completing the Euro-NATO Joint Jet Pilot Training, she became a fighter pilot and was assigned to the 132nd Squadron, 51st Bomber Wing, based in Istrana, Italy.

In 2007, Samantha completed Introduction to Fighter Fundamentals training. From 2007 to 2008, she flew the MB-339 and served in the Plan and Operations Section for the 51st Bomber Wing in Istrana, Italy. In 2008, she joined the 101st Squadron, 30th Bomber Wing, based at Foggia, Italy, where she completed operational conversion training for the AM-X ground attack fighter. Samantha is a Captain in the Italian Air Force. She has logged over 500 hours flying six types of military aircraft: SF-260, T-37, T-38, MB-339A, MB-339CD and AM-X.

References

1. NASA. Biographical Data - <http://www.jsc.nasa.gov/Bios/htmlbios/jemison-mc.html>
2. Women@NASA - <http://www.nasa.gov/directorates/women/index.html>
3. ESA Astronauts - http://www.esa.int/Our_Activities/Human_Spaceflight/Astronauts/Samantha_Cristoforetti
4. http://www.britnycole.com/quotes/quotes/m/mcmae_jemison.html
5. http://www.nasa.gov/science/pace/pacepaper/graefwescan_bio_mae_and_nori.html

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[a](#)[f](#)[t](#)[p](#)

A live prototype can be viewed at:

<https://lwolfson.studio.mcad.edu/webdesign1/stemgirls/index.html>

<https://lwolfson.studio.mcad.edu/webdesign1/stemgirls/scigirls-seven.html>

<https://lwolfson.studio.mcad.edu/webdesign1/stemgirls/role-models.html>

LIVE PROTOTYPE